CLAIMS:

1. A method, comprising:

subjecting an original, pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients;

compressing the at least one selected bit plane to produce free space in the at least one selected bit plane;

embedding hidden data in the free space of the at least one compressed bit plane; and

subjecting the at least one embedded bit plane and the other bit planes to an Inverse IWT to produce a marked pixel domain image.

2. The method of claim 1, wherein the at least one selected bit plane is taken from a range of about a 2^{nd} bit plane and a 6^{th} bit plane of the matrix of wavelet coefficients.

3. The method of claim 1, wherein the at least one selected bit plane is taken from a range of about a 3^{rd} bit plane and a 6^{th} bit plane of the matrix of wavelet coefficients.

4. The method of claim 1, wherein the at least one selected bit plane is taken from a range of about a 4^{th} bit plane and a 6^{th} bit plane of the matrix of wavelet coefficients.

5. The method of claim 1, wherein the step of compressing the at least one selected bit plane includes using an entropy coding algorithm to produce the free space.

6. The method of claim 5, wherein the entropy coding algorithm arithmetic lossless coding.

7. The method of claim 5, wherein the entropy coding algorithm is JBIG lossless coding.

8. The method of claim 1, further comprising using a key to establish one or more parameters defining how the hidden data is embedded in the free space, wherein knowledge of the key is necessary to extract the hidden data from the free space.

9. The method of claim 1, further comprising embedding the hidden data in high frequency sub-bands of the selected bit plane.

10. The method of claim 9, wherein the high frequency sub-bands are at least one of a LH_1, a HL_1 and a HH_1 sub-band.

11. The method of claim 1, further comprising modifying a histogram of the original image such that one or more locations at extremes of the histogram are empty prior to embedding the selected bit plane with the hidden data.

12. The method of claim 11, wherein:

the histogram may be represented by points plotted in a Cartesian coordinate system in which discrete intensity levels exist along an ordinate axis and numbers of pixels having such intensity levels exist along an abscissa; and

the modification includes moving any data plotted near extremes of the ordinate axis toward more moderate locations.

13. The method of claim 12, further comprising embedding information indicative of the movement of the data away from the extremes of the ordinate axis in the free space prior to subjecting the at least one embedded bit plane to the Inverse IWT.

14. An apparatus including a processor operating under the instructions of a software program, the software program causing the apparatus to perform actions, comprising:

subjecting an original, pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients;

compressing the at least one selected bit plane to produce free space in the at least one selected bit plane;

embedding hidden data in the free space of the at least one compressed bit plane; and

subjecting the at least one embedded bit plane and the other bit planes to an Inverse IWT to produce a marked pixel domain image.

15. The apparatus of claim 14, wherein the at least one selected bit plane is taken from a range of about a 2^{nd} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

16. The apparatus of claim 14, wherein the at least one selected bit plane is taken from a range of about a 3^{rd} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

17. The apparatus of claim 14, wherein the at least one selected bit plane is taken from a range of about a 4^{th} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

18. The apparatus of claim 14, wherein the step of compressing the at least one selected bit plane includes using an entropy coding algorithm to produce the free space.

19. The apparatus of claim 18, wherein the entropy coding algorithm arithmetic lossless coding.

20. The apparatus of claim 18, wherein the entropy coding algorithm is JBIG lossless coding.

21. The apparatus of claim 14, further comprising using a key to establish one or more parameters defining how the hidden data is embedded in the free space, wherein knowledge of the key is necessary to extract the hidden data from the free space.

22. The apparatus of claim 14, further comprising embedding the hidden data in high frequency sub-bands of the selected bit plane.

23. The apparatus of claim 22, wherein the high frequency sub-bands are at least one of a LH_1, a HL_1 and a HH_1 sub-band.

24. The apparatus of claim 14, further comprising modifying a histogram of the original image such that one or more locations at extremes of the histogram are empty prior to embedding the selected bit plane with the hidden data.

25. The apparatus of claim 24, wherein:

the histogram may be represented by points plotted in a Cartesian coordinate system in which discrete intensity levels exist along an ordinate axis and numbers of pixels having such intensity levels exist along an abscissa; and

the modification includes moving any data plotted near extremes of the ordinate axis toward more moderate locations.

26. The apparatus of claim 25, further comprising embedding information indicative of the movement of the data away from the extremes of the ordinate axis in the free space prior to subjecting the at least one embedded bit plane to the Inverse IWT.

27. A storange medium containing a software program operable to cause an apparatus including a processor operating under the instructions of the software program to perform actions, comprising:

subjecting an original, pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients;

compressing the at least one selected bit plane to produce free space in the at least one selected bit plane;

embedding hidden data in the free space of the at least one compressed bit plane; and

subjecting the at least one embedded bit plane and the other bit planes to an Inverse IWT to produce a marked pixel domain image.

28. An apparatus, comprising:

means for subjecting an original, pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

means for selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients;

means for compressing the at least one selected bit plane to produce free space in the at least one selected bit plane;

means for embedding hidden data in the free space of the at least one compressed bit plane; and

means for subjecting the at least one embedded bit plane and the other bit planes to an Inverse IWT to produce a marked pixel domain image.

29. A method, comprising:

subjecting a marked pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients that contains hidden data;

extracting the hidden data from the at least one bit plane;

decompressing the at least one bit plane; and

subjecting all bit planes to an Inverse IWT to produce an original pixel domain image.

30. The method of claim 29, wherein the at least one bit plane is taken from a range of about a 2^{nd} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

31. The method of claim 29, wherein the at least one bit plane is taken from a range of about a 3^{rd} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

32. The method of claim 29, wherein the at least one bit plane is taken from a range of about a 4^{th} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

33. The method of claim 29, wherein the step of decompressing the at least one bit plane includes using an inverse entropy coding algorithm.

34. The method of claim 33, wherein the inverse entropy coding algorithm is one of an arithmetic lossless coding technique, and a JBIG lossless coding technique.

35. The method of claim 29, further comprising using a key to establish one or more parameters defining how the hidden data was embedded in the at least one bit plane to extract the hidden data.

36. The method of claim 29, wherein the hidden data were embedded in high frequency sub-bands of the selected bit plane.

37. The method of claim 36, wherein the high frequency sub-bands are at least one of a LH_1, a HL_1 and a HH_1 sub-band.

38. The method of claim 29, wherein: a histogram of the original image was modified such that one or more locations at extremes of the histogram were empty prior to embedding the at least one bit plane with the hidden data.

39. The method of claim 38, wherein information regarding how the histogram of the original image was modified is included in the hidden data.

40. The method of claim 39, further comprising reversing the modification to the histogram using the information regarding how the histogram of the original image was modified.

41. An apparatus including a processor operating under the instructions of a software program, the software program causing the apparatus to perform actions, comprising:

subjecting a marked pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients that contains hidden data;

extracting the hidden data from the at least one bit plane;

decompressing the at least one bit plane; and

subjecting all bit planes to an Inverse IWT to produce an original pixel domain image.

42. The apparatus of claim 41, wherein the at least one bit plane is taken from a range of about a 2^{nd} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

43. The apparatus of claim 41, wherein the at least one bit plane is taken from a range of about a 3^{rd} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

44. The apparatus of claim 41, wherein the at least one bit plane is taken from a range of about a 4^{th} bit plane and a 6th bit plane of the matrix of wavelet coefficients.

45. The apparatus of claim 41, wherein the step of decompressing the at least one bit plane includes using an inverse entropy coding algorithm.

46. The apparatus of claim 45, wherein the inverse entropy coding algorithm is one of an arithmetic lossless coding technique, and a JBIG lossless coding technique.

47. The apparatus of claim 41, further comprising using a key to establish one or more parameters defining how the hidden data was embedded in the at least one bit plane to extract the hidden data.

48. The apparatus of claim 41, wherein the hidden data were embedded in high frequency sub-bands of the selected bit plane.

49. The apparatus of claim 48, wherein the high frequency sub-bands are at least one of a LH_1, a HL_1 and a HH_1 sub-band.

50. The apparatus of claim 41, wherein: a histogram of the original image was modified such that one or more locations at extremes of the histogram were empty prior to embedding the at least one bit plane with the hidden data.

51. The apparatus of claim 50, wherein information regarding how the histogram of the original image was modified is included in the hidden data.

52. The apparatus of claim 51, further comprising reversing the modification to the histogram using the information regarding how the histogram of the original image was modified.

53. A storage medium containing a software program operable to cause an apparatus including a processor operating under the instructions of the software program to perform actions, comprising:

subjecting a marked pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients that contains hidden data;

extracting the hidden data from the at least one bit plane;

decompressing the at least one bit plane; and

subjecting all bit planes to an Inverse IWT to produce an original pixel domain image.

54. An apparatus, comprising:

means for subjecting a marked pixel domain image to an Integer Wavelet Transform (IWT) to obtain a matrix of wavelet coefficients;

means for selecting at least one bit plane between a least significant bit plane and a most significant bit plane of the matrix of wavelet coefficients that contains hidden data;

means for extracting the hidden data from the at least one bit plane;

means for decompressing the at least one bit plane; and

means for subjecting all bit planes to an Inverse IWT to produce an original pixel domain image.